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(11)

EP 0 761 550 A1

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:

12.03.1997 Bulletin 1997/11

(51) Int. Cl.<sup>6</sup>: B65D 5/50

(21) Application number: 96112253.8

(22) Date of filing: 30.07.1996

(84) Designated Contracting States:  
AT BE CH DE ES FR GB IT LI SE

(30) Priority: 07.09.1995 IT MI951878

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### (54) Box with retention and protection element for a jar

(57) A box for housing, retaining and protecting a bottle or the like, the box being formed from a single punched and shaped cardboard sheet comprising elongate strips which are folded into the closed box to define at its bottom a base for supporting the bottom of the bot-

tle, and at its top a retention element which presses on the top of the bottle, which is hence securely locked and protected within the box.

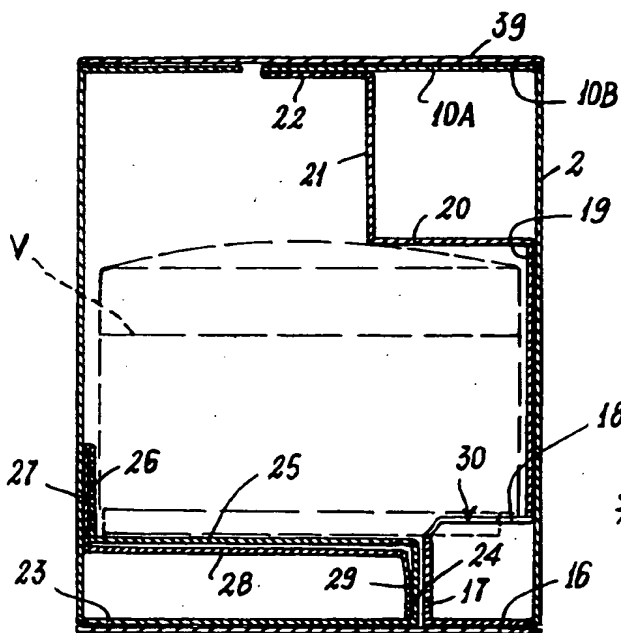


Fig. 6

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## Description

This invention relates to a box for housing, retaining and protecting a bottle or the like, and a punched and shaped sheet usable for forming the box.

European patent application EP-A-0642977 describes a box formed from a single sheet of punched and shaped cardboard, this box having in its lower part a base able to support the bottom of a bottle housed in the box in such a manner that the bottom of the bottle is retained at a safe distance from the lower lid of the box and is hence protected from accidental impact; said box base being formed from two elongate strips forming part of the single sheet from which the box is formed, the strips being folded back on themselves and being partially glued to the lateral walls of the box of which they form part.

In most of its possible applications, the box of EP-A-0642977 is suitable for the purposes for which it is intended. However for certain applications this box has limitations in its use, in particular because the bottle contained in the box is protected against impact only at its lower end, and not at its top, with the result that the bottle can move or oscillate even to a substantial extent in the longitudinal direction within the box, with an unpleasant "knocking" sensation inside the box during its transportation.

The main object of the present invention is to provide a box formed from a single sheet of punched and shaped flexible material, which box besides having a solid base for supporting and protecting the bottom of the bottle housed within it, also comprises a retention element which presses on the top of the bottle to maintain said top spaced from the upper lid of the box, so securely retaining and protecting the bottle.

A further object is to provide a one-piece punched and shaped cardboard sheet from which the said box can be formed in a very simple, rapid and economical manner using the common automatic machines employed for manufacturing boxes of this type.

A further object is to provide a cardboard sheet and a box of the aforesaid type, in which the box comprises a window, which can also extend across two or three lateral panels of the box, through which the contained bottle securely locked and protected within the box can be seen from the outside.

These and further objects are attained by a box comprising two elongate strips projecting from the lower end of the box and folded over and partially glued into the box to form two supports for the bottom of the bottle which are spaced from the lower lid of the box, one of said elongate strips extending as far as a flap projecting from the upper end of the box, to which it is partially glued and about which it is folded into the closed box to form a retention element which presses onto the top of the bottle to maintain it spaced from the upper lid of the box.

The cardboard sheet or the like used to form the box comprises at least four main panels and an end tab,

these being consecutive and separated from each other by mutually parallel folding lines, a closure panel and at least one flap projecting from one side of said main panels, a closure panel and two elongate strips projecting from the other side of respective main panels, one of said elongate strips projecting from a main panel from the other side of which there projects said flap, in each of said elongate strips there being provided at least six folding lines which are substantially perpendicular to the folding lines which separate the main panels from each other and which divide the strips into at least seven distinct strip portions, the length of the first elongate strip being greater than the sum of the length of the main panel from which it projects and twice the length of that portion of this strip which is closest to said main panel, in the second elongate strip the second, the third and the fourth strip portion, counting from the main panel from which this elongate strip projects, having lengths, in the stated order, which are substantially equal to the lengths of the seventh, the sixth and respectively the fifth portion of this elongate strip.

The structure and characteristics of the box and the punched and shaped cardboard sheet from which it is formed will be more apparent from the description of a preferred embodiment thereof given hereinafter by way of non-limiting example with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a punched and shaped cardboard sheet, of which

Figures 2 to 4 represent different successive formation stages for preparing a box, of which

Figure 5 is a perspective view with the top of the box partially open, and of which

Figure 6 is a cross-section taken on the line 6-6 of Figure 5, but with the box completely closed and enclosing a bottle shown by dashed lines.

With initial reference to Figure 1, this represents a plan view of a punched and shaped sheet of flexible material (generally cardboard). This sheet comprises four main panels 1-4 and an end tab 5, these being consecutive and separated by folding lines 6-9. From one side (the upper side on the drawing) of the group of main panels 1-4 there project a closure panel 39 (to form the upper lid of the box) and two separate flaps 10 and 12, the flap 10 being divided into two parts 10A, 10B by a folding line 11 close to the main panel 2 from which this flap projects.

From the other side of the group of main panels (ie from the lower side of Figure 1) there project a closure panel 13 (to form the lower lid of the box) and two elongate strips 14, 15, each divided into seven distinct strip portions 16-22 and 23-29 respectively, by folding lines (for simplicity not numbered) perpendicular to the folding lines 6-9.

The first elongate strip 14 projects from the same main panel 2 from which the flap 10 projects, its length being such that its strip portion 22 becomes super-

posed on the flap portion 10A when this first elongate strip has been folded about the folding line which separates its strip portions 16 and 17 (Figure 2). Glue is applied to the strip portions 19 and 22 before this folding operation, hence after said folding the strip portion 19 becomes glued onto the main panel 2, and the strip portion 22 becomes glued onto the flap portion 10A. To achieve this, the total length of the strip 14 is greater than the sum of the length of the main panel 2 and double the length of the strip portion 16.

In the second elongate strip 15, the strip portions 24, 25 and respectively 26 have, in the stated order, lengths substantially equal to the lengths of the strip portions 29, 28 and 27 respectively, which can be effectively superposed on these former after the elongate strip 15 has been folded about the folding lines separating the strip portions 26 and 27 (Figure 2). Glue is applied to the strip portions 26 and 29 before this folding operation, hence the strip portion 26 becomes fixed to the strip portion 27, and the strip portion 29 becomes fixed to the strip portion 24.

After the first gluing and folding operation (Figure 2), the elongate strip 15 is again folded on itself (Figure 3) about the folding line which separates the strip portions 23 and 24, after applying a layer of glue to the surface of the strip portion 27 (Figure 2), which is hence securely glued onto the surface of the main panel 4.

At this point, the cardboard sheet is folded about the folding lines 6, 7, 8 and 9, and the tab 5 is glued to the inside of the main panel 1.

By now rotating the strip portion 23 (Figure 4) and respectively the strip portion 16 of the two elongate strips towards the interior of the box a robust base is automatically formed for the resting and supporting of a bottle V subsequently inserted into the box, as can be clearly seen from Figure 6.

A part of the support base has a width greater than the other part and is defined by the superposing of the strip portions 26, 27; 25, 28; 24, 29. It can be seen that the strip portions 25 and 28 are not glued to each other and that the strip portions 24, 29 are glued together only along a part of their length, so that those strip portions in mutual contact can slide freely one on the other with possible flexing of one relative to the other, to allow easy folding of the elongate strip into the box.

In the lower part of the box (Figures 5 and 6) the elongate strip 14 determines a support for the bottle V which is defined by the rectilinear edge of an aperture 30 formed in the strip portion 18 (the length of the strip portion 17 is substantially equal to the length of the strip portion 24), the contour of the aperture 30 extending along the strip portion (which in the made-up box is substantially parallel to the bottom lid 13) being substantially complementary to the outer profile of the side of the bottle V which is hence securely retained by said strip portion 18.

It can be seen that the support base for the bottle is very strong, it being formed from three adjacent cardboard layers 17, 24, 29 and from the two layers repre-

sented by the strip portions 25, 28.

It will be assumed that the bottom of the box has already been closed and that the bottle V has already been inserted into the box (from the top). By now rotating the flap portion 10B inwards, ie moving it in the direction of the arrow A (Figure 4), the strip portions 21 and 22 are made to flex inwards such that when the flap portion 10A is also moved towards the interior of the box (Figure 5) the two strip portions 20 and 21 assume the orientation shown in Figure 6, with the strip portion 20 pushing on the top of the bottle V, which is hence securely retained at rest within the box and protected from impact, as the bottom and top of the bottle are maintained spaced from the bottom and top ends of the box.

In the embodiment shown on the drawings, the cardboard sheet comprises a window 31 which extends across the entire main panel 3 and across part of the two panels 2 and 4 adjacent to it. This window, the presence of which is not strictly necessary, means that from the outside of the box when closed and containing a bottle, a label or writing applied to the lateral surface of the bottle is and remains clearly visible, in that the bottle cannot be rotated about itself, this being prevented by the shaped edge of the aperture 30 which presses against the side of the bottle.

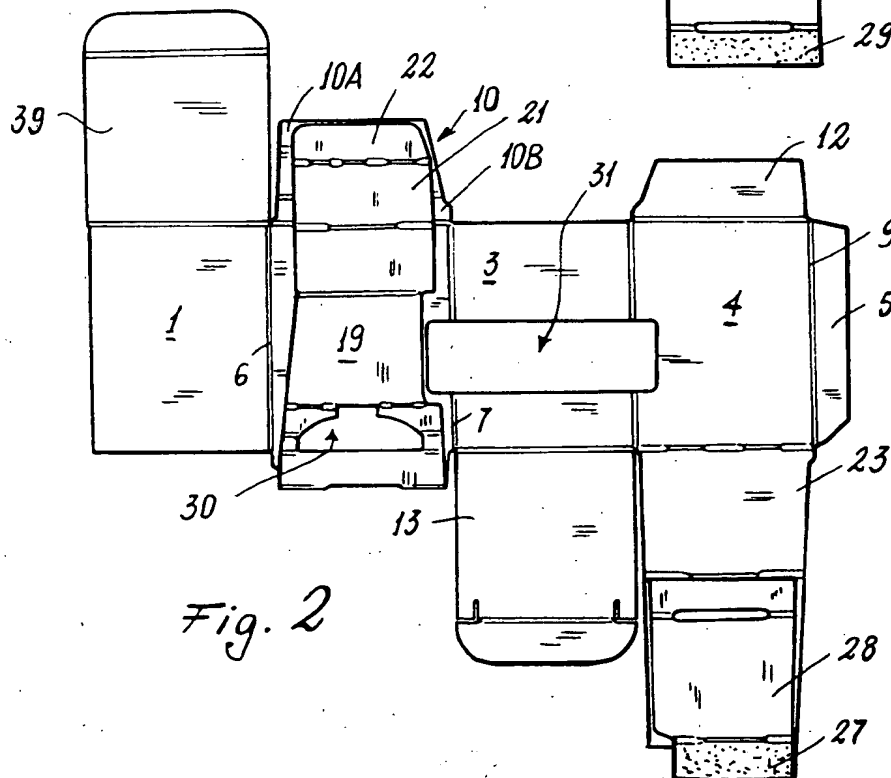
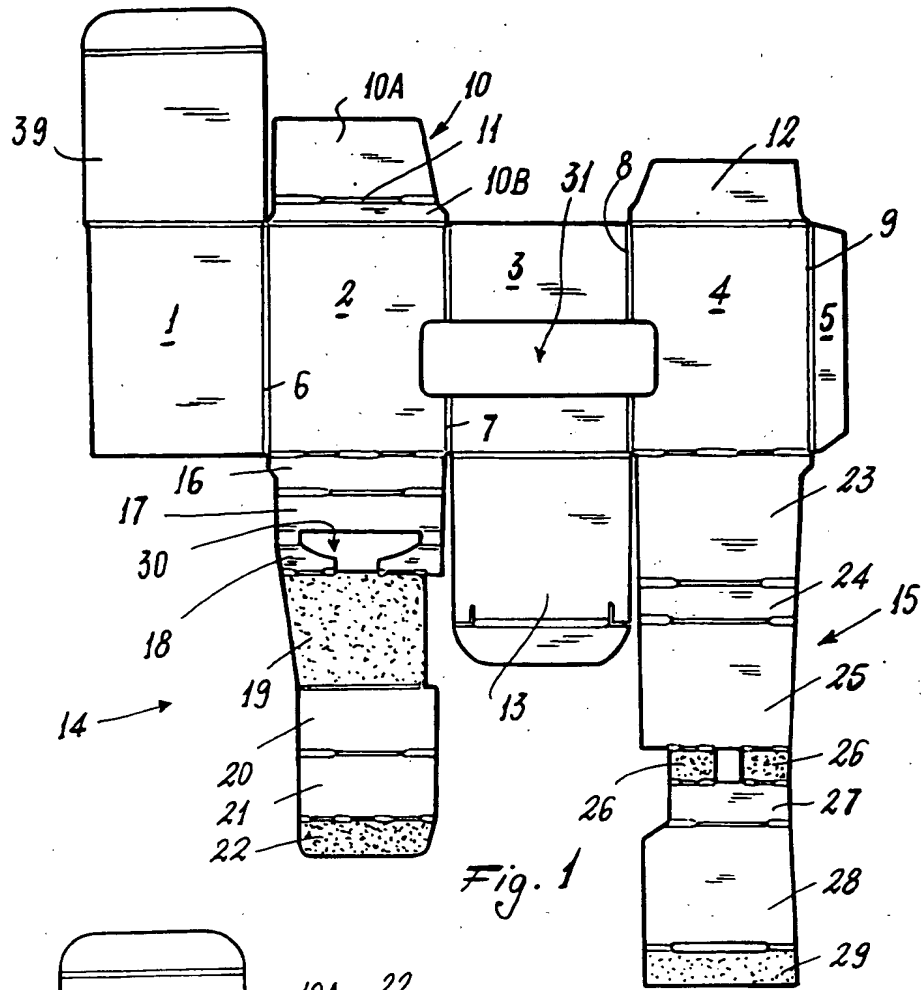
Finally it should be noted: that the box can be constructed very easily and rapidly using automatic machines; that the presence of the aperture 30 may not be necessary and in contrast an aperture similar to the aperture 30 can be provided in the superposed strip portions 25 and 28 (in which case the bottle would be retained in a stable position spaced from all the lateral walls of the box); and finally that the folding line 11 in the flap 10 need not necessarily be provided.

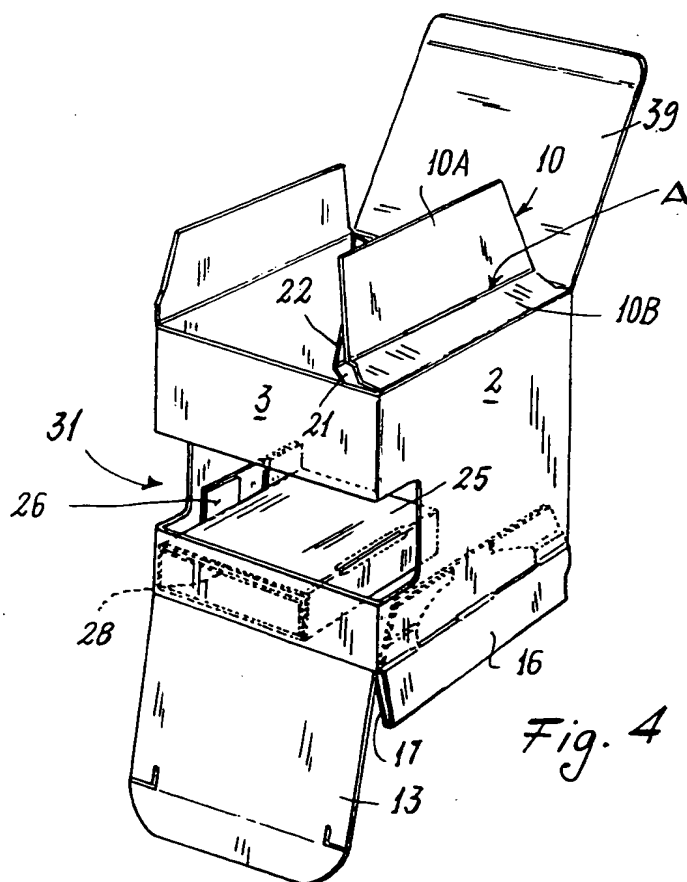
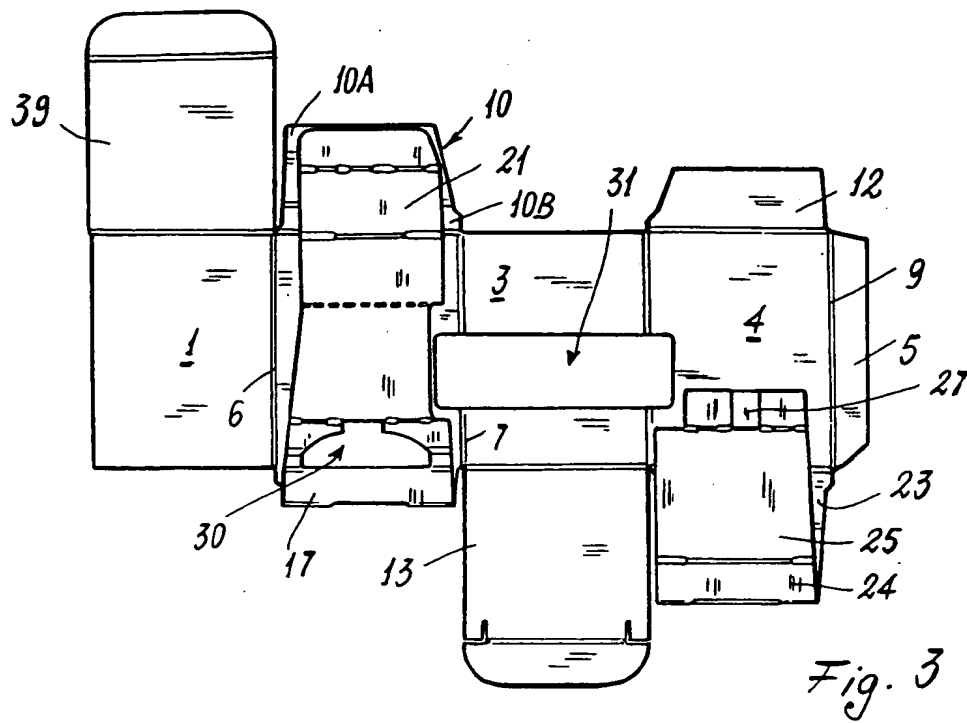
#### Claims

1. A box with elements for housing, retaining and protecting a bottle or the like, comprising two elongate strips projecting from the lower end of the box and folded over and partially glued into the box to form two supports for the bottom of the bottle which are spaced from the lower lid of the box, one of said elongate strips extending as far as a flap projecting from the upper end of the box, to which it is partially glued and about which it is folded into the closed box to form a retention element which presses onto the top of the bottle to maintain it spaced from the upper lid of the box.
2. A box as claimed in claim 1, characterised in that in at least one of said elongate strips in correspondence with the region forming said support for the bottom of the bottle, there is provided an aperture bounded by an edge which mates with the lateral surface of said bottle.
3. A box as claimed in claims 1 and 2, characterised in

that in the sides of the box there is provided a window which extends at least across one of the main panels forming the side walls of the box.

4. A punched and shaped sheet of cardboard or other flexible material for forming a box with elements for supporting, retaining and protecting a bottle or the like, comprising at least four main panels and an end tab, these being consecutive and separated from each other by mutually parallel folding lines, a closure panel and at least one flap projecting from one side of said main panels, a closure panel and two elongate strips projecting from the other side of respective main panels, one of said elongate strips projecting from a main panel from the other side of which there projects said flap, in each of said elongate strips there being provided at least six folding lines which are substantially perpendicular to the folding lines which separate the main panels from each other and which divide the strips into at least seven distinct strip portions, the length of the first elongate strip being greater than the sum of the length of the main panel from which it projects and twice the length of that portion of this strip which is closest to said main panel, in the second elongate strip the second, the third and the fourth strip portion, counting from the main panel from which this elongate strip projects, having lengths, in the stated order, which are substantially equal to the lengths of the seventh, the sixth and respectively the fifth portion of this elongate strip. 5  
10  
15  
20  
25  
30
5. A sheet of cardboard or the like as claimed in claim 4, characterised in that in the flap projecting from the other side of that main panel from which the first elongate strip projects, there is provided a folding line close to the said main panel. 35
6. A sheet of cardboard or the like as claimed in claims 4 and 5, characterised in that in that third portion of said strip which is closer to the main panel from which it projects, there is provided an aperture, of which that edge facing the free end of said elongate strip is shaped in a manner substantially complementary to the outer profile of an outer lateral portion of the bottom of the bottle which is to be housed in the box. 40  
45
7. A sheet of cardboard or the like as claimed in claims 4 to 6, characterised in that a window is provided in at least one of said main panels. 50
8. A sheet of cardboard or the like as claimed in claim 7, characterised in that said window totally crosses one of the main panels and extends partially across each of the two main panels adjacent to it. 55







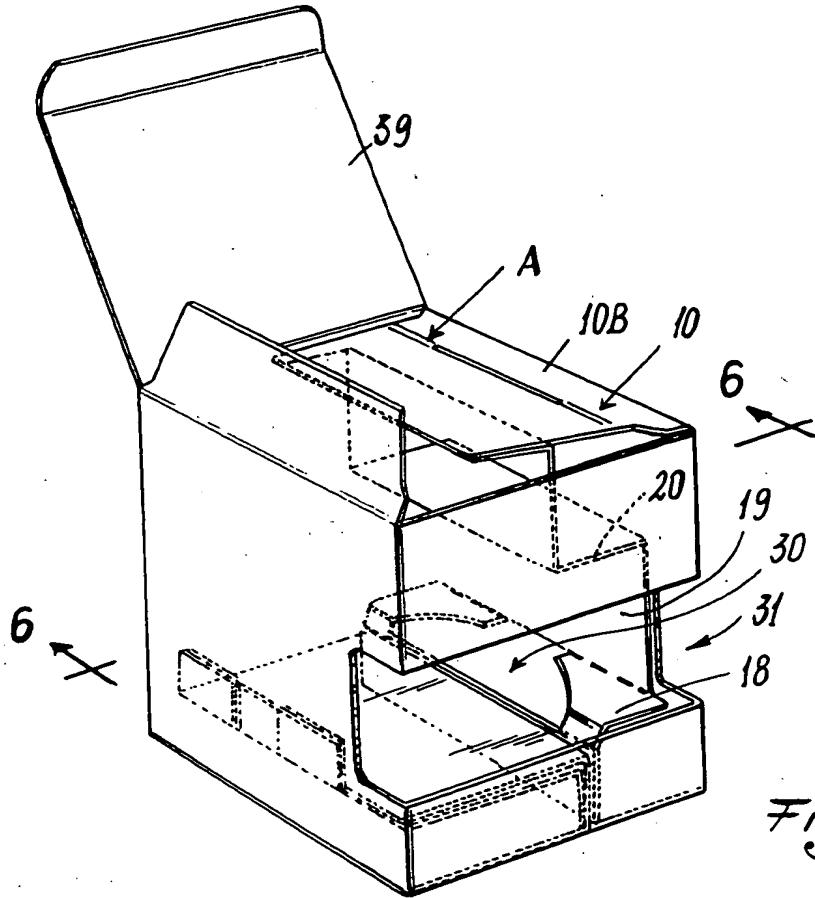


Fig. 5

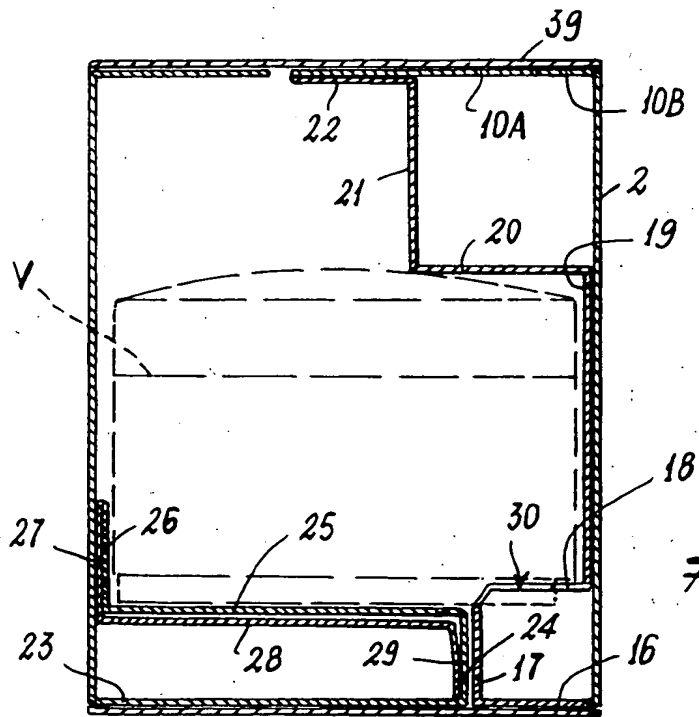


Fig. 6



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# EUROPEAN SEARCH REPORT

Application Number  
EP 96 11 2253

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A,D	EP-A-0 642 977 (GI. BI. EFFE S.R.L.) * column 2, line 40 - column 3, line 24; figure 1 *	1,4	B65D5/50
A	US-A-5 145 070 (PALLET ET AL.) * column 1, line 49 - column 2, line 9; figures *	1,4	
A	GB-A-2 154 213 (WADDINGTONS LTD.) * page 1, line 32 - line 83; figures *	1,4	
A	US-A-3 438 482 (HAMILTON) * column 1, line 41 - line 63; figures *	1,4	
A	US-A-3 158 307 (MAYER) * column 1, line 42 - column 2, line 34; figures *	1,4	
A	DE-A-24 45 790 (SCHMIDT GRAPHISCHE WERKE) * figure 1 *	1,4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
BERLIN		7 November 1996	Olsson, B
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